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TECHNOLOGY DEPT

SCIENCE NEWS LETTER

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THE WEEKLY SUMMARY OF CURRENT SCIENCE • AUGUST 24, 1946

Collecting–Net Wings

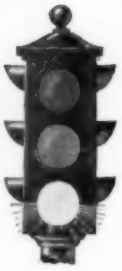
See Page 116

A SCIENCE SERVICE PUBLICATION

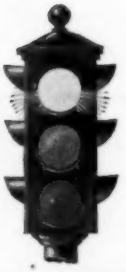
1921 TWENTY-FIFTH ANNIVERSARY 1946

In motor oil

Chemistry starts



where nature stops



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SERVING INDUSTRY . . . WHICH SERVES MANKIND

ORDNANCE

Exploring Upper Air

V-2 rockets from Germany are serving Army, Navy and scientific groups in research into atmospheric conditions above the earth. Aerojet missiles also are being fired.

➤ GERMAN V-2 rockets, on peaceful missions seeking new knowledge for science, will be sent streaking through the skies over the desert at White Sands, N. M., until at least next April, according to a tentative schedule announced by Lt. Col. J. G. Bain, chief of the Guided Missiles Branch, Rocket Division, U. S. Army Ordnance.

From a stock of 25 completely assembled V-2's, 10 have been fired, and 10 more will be sent into the upper atmosphere by early Feb., 1947. The others will probably follow in the next two months, but a decision will be made early next year on whether to construct more of the German weapons or turn to other designs in future exploration of the region around 100 miles overhead, Col. Bain said.

Of an original request for 100 complete V-2's, only 25 were obtained. Some parts are available but others will have to be manufactured in the U. S., using captured German plans, if it is decided to continue the V-2 program after the first 25 are expended.

Meanwhile, an anti-aircraft guided missile has been fired in Utah, first of 60 standard Aerojet rocket-propelled units scheduled for firing this year, the Army has announced.

Called "gapa," ground-to-air pilotless aircraft, the missiles are built by the Boeing Aircraft Co. Pencil-slim, the latest postwar weapon is 10 feet long.

The tenth Nazi missile actually to be fired at White Sands was instrumented by a group including the Army Air Forces and headed by Dr. W. G. Dow of the University of Michigan. This winds up the first round of rockets with the scientific groups each getting another V-2 in the second series beginning in October, under present plans.

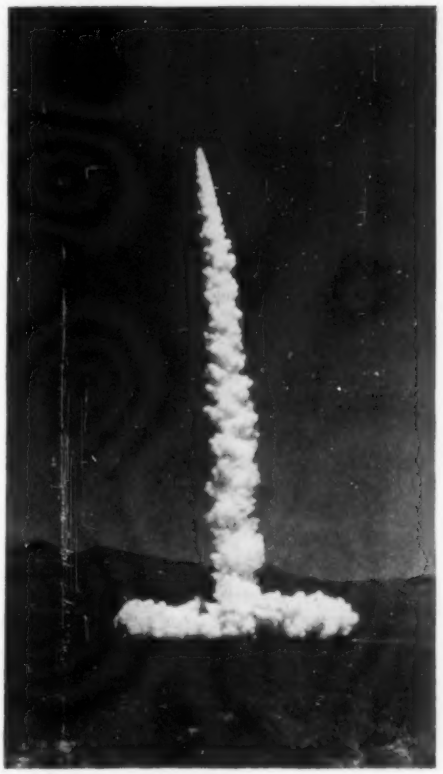
The eleventh rocket, to be fired Oct. 3, will be a second one for scientists of the Naval Research Laboratory, Washington, D. C. The Navy scientists directed the data-recording work on the V-2 shot off June 28, but got only a partial record of the flight on their instruments.

The twelfth V-2 will be in the scientific hands of the Johns Hopkins Laboratory of Applied Physics, Silver Spring, Md. This group sent instruments up in the record-breaking flight of the eighth V-2, July 30, and troops are still searching the desert for records of the trip, recorded on instruments that fell separately from the rocket.

Princeton University scientists will be in charge of the 13th rocket, scheduled for firing Oct. 31, and other V-2 shoots are listed at two-week intervals into early 1947.

Dr. E. H. Krause, head of the rocket sonde section of the Naval Research Laboratory's research section, is chairman of a V-2 technical group in charge of the scientific use of the Nazi weapons being fired at White Sands.

Science News Letter, August 24, 1946



GAPA—This heretofore secret guided missile has been fired for the first time over the salt fields of Utah. It is pencil-slim, 10 feet long, and has been designed as potential defense against attack by enemy aircraft.

U. S. Army Air Forces Photos

RESEARCH MISSILE—V-2 rockets have been fired higher than 100 miles into the stratosphere. Special instruments replace TNT in the warhead and may be lowered by parachute after ejection. These instruments furnish data for scientists.

SEISMOLOGY

West Indies Quake=8:25

Only three recorded tremors have been rated higher than the earthquake with its serious aftershocks which rocked the West Indies.

➤ THE EARTHQUAKE that rocked the West Indies Aug. 4, and with its aftershocks killed more than 65 people, was a harder shock than the famous Japanese quake in 1923 that claimed nearly 100,000 lives, seismologists at the United States Coast and Geodetic Survey have stated.

The tremor that centered in the Caribbean off the Dominican Republic has been rated at 8.25 on the scale devised by Dr. Beno Gutenberg of the Seismological Laboratory of the California Institute of Technology, Pasadena, Calif. Another 8.25 quake was the devastating San Francisco shock of 1906, and only three recorded tremors

have been rated higher. The three greatest shocks, listed as 8.5 on Dr. Gutenberg's scale, were on the border between Ecuador and Colombia in South America in 1906, in China in 1920 and in Chile in 1922. The Jap quake in 1923 was rated 8.0.

Dr. Gutenberg's rating system, regarded by many seismologists as the most accurate, is the only scale measuring the intensity of the earth's tremors by instruments. It uses the amplitude of a quake's motion as recorded on a seismograph to rate the shock, and a Gutenberg figure of 7.5 will be a tremor big enough to wreck any city. Higher numbers are based on the extent of the quake.

Tremor on Aug. 8 that raised the toll from the quakes was one of more than 150 aftershocks recorded after the first big tremor. These following quakes may continue a month or several months more with varying intensity, seismologists declare. While not looking for any more as big as those already recorded, the earthquake authorities say that these "hangover" tremors are unpredictable.

The longest period of aftershocks ever recorded was for the quake at Helena, Mont., in 1935 that was followed by tremors for a full year.

Emphasizing that location is the all-important factor in the toll from quakes, seismologists say that the West Indies disturbance killed relatively few people because the epicenter of the shock was approximately ten miles at sea. The area affected was not densely populated and the many flimsy buildings helped keep the death list relatively small for an earth-rocking of that magnitude.

Among modern earthquakes, the Chinese shocks in 1920 claimed 180,000 lives for the highest fatalities, but China's historians have recorded a quake in 1556 with an estimated 830,000 deaths.

Science News Letter, August 24, 1946

ENGINEERING

Shielded from Electricity

➤ SHIELDED buildings to protect delicate electrical experiments and tests inside from electrical influence without are not new, but in two under construction unique methods are employed.

One is a Navy hangar, a $2,000,000 project just started at Patuxent River, Md., to provide facilities for delicate tests on radar and other electronic devices installed in aircraft.

The other is a group of laboratory buildings, some completed and others under construction at Nutley, N. J., in which the Federal Telephone and Radio Corporation will conduct experiments in television, frequency modulated broadcasting, aerial navigation and radar. Their shielding walls are designed to protect against atmospheric electricity.

In the Navy hangar, fine mesh wire will be used as a shield. It will be one-eighth inch galvanized mesh wire, installed around the entire hangar in such a manner as to prevent any breaks in its continuity. Two layers of wire mesh will be laid in the concrete floor.

Wire mesh is used in this building, instead of solid sheets of galvanized steel or copper, because it is cheaper and will permit ventilation and light, while at the same time opposing passage of electronic disturbances.

In the Nutley building, the walls are made of prefabricated panels made up of flat sheets of aluminum and fluted sheets of steel, with an inch-and-a-half layer of glass fiber between. The glass is an inert, dielectric material that prevents electrolytic action between the two metals and also acts as insulation to keep heat within the building.

The steel sub-floors of the buildings are also made of prefabricated panels with a cellular structure, over which a lightweight concrete fill is poured. The cells provide runways for electric cables to furnish power within the building where needed.

Science News Letter, August 24, 1946

BIOLOGY

System Similar to Radar Not New to Bats

See Front Cover

➤ BATS USE the thin, tough membrane that forms their wings not only to fly, but to catch food and locate obstacles.

Most species of bats, except the large fruiteaters, make a collecting net of the membrane, doubling it up like an apron. The bat then deftly removes the insects upon which it feeds with its strong teeth or flies to a nearby tree where it can manage the larger victims, states Richard Headstrom of Boston, Mass.

The picture on the front cover of this SCIENCE NEWS LETTER, by George A. Smith, Quarryville, Pa., shows a brown bat with his wings not quite folded out of sight.

Bats, unjustly abhorred by many superstitious people, detect obstacles in their path by an echo system somewhat similar to that of radar. They emit supersonic notes that are reflected by the obstacle. The membrane which serves as wings is equipped with sensitive nerves that apparently respond to the reflected sound waves and help locate the source.

Bats, true mammals with the habits of birds, are not at all fitted for walking. Their hind legs are twisted around so that their knees bend backward, in the

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opposite direction from ours, Mr. Headstrom points out in a report to the Massachusetts Horticultural Sociey. This makes it extremely difficult for them to walk. When they do attempt it, they succeed only in a flapping shuffle.

The little brown bat often found in the northeastern United States mates in October, but the single young is not born until the following June or July. The mother nurses her young from the breasts as does a mouse for two or three weeks, after which the baby is expected to forage for himself.

The wings of the brown bat often measure nine inches from tip to tip, yet when folded they hardly show. When the bat rests or sleeps, it hangs head downward, holding on by the claws of its hind feet.

As cold weather approaches, bats move into caves or hollow trees, where they pass the winter. Some hibernate alone, but more often they collect in twos and threes, or even larger groups. While hibernating, they hang head down, with their wings folded close to their sides.

Science News Letter, August 24, 1946

NUTRITION

Food Plans for World

Long-range planning of United Nations Food and Agriculture Organization aims at better-balanced diets for all countries of the world.

➤ MORE MILK, fruits and vegetables but less sugar are the high points in the United Nations Food and Agriculture Organization's goals for the United States food supply in 1950 compared with prewar American diets, the FAO's world food survey reveals.

Based on a predicted 12% increase in population by 1950, the goals for the United States headline a need for 55.6% more milk and milk products, excluding butter, than the nation used before the war. Fruit and vegetables should jump to 48.6% more than prewar consumption, the goals indicate, with 17.6% more meat, fish and eggs needed for the 12% increase in population.

Americans before the war used more sugar than the 1950 goal of the FAO, while most other products should show percentage gains of less than the population increase.

With Americans averaging more than 3,000 calories in their daily diet compared with the FAO minimum of 2,600, the goals outlined for the United States are aimed at a better balanced diet rather than more food. But Americans are not the biggest eaters in the world; New Zealand, with an average of 3,281 calories for each person per day top the list.

Lowest calories per individual were reported for troubled Korea with an average of only 1,904. The survey covered 70 countries with nine-tenths of the world's population.

The United Kingdom, like the United States, needs more fruits, vegetables and milk with less sugar, according to the survey. The FAO also called for a 2.5% decrease in grain products consumption by the British to meet an expected 6% population increase by 1950, while the United States will need 4% more grain than was consumed before the war.

But balancing American and British diets is a small matter compared with the fact, emphasized in the FAO survey, that "about half the world's population was seriously undernourished in the years before the war."

The goal for China's millions by 1960 includes a jump from 20,000 tons of milk to 1,150,000 tons or an increase of 5,650%. India, by 1960, should show a 60% increase in milk and a 330% increase in meat, slightly more than the goal for China. Both countries require more of all food products, the survey shows.

South America will need more food of all classifications, while southeastern Europe requires increases for all foods but grain.

Science News Letter, August 24, 1946

AERONAUTICS

Television and Radio To Record Flight Tests

➤ TEST PILOTS, the daring heroes who test new aircraft at the risk of their lives, may lose their jobs in the future as scientific instruments put new aircraft through their paces without a pilot at the controls.

Complete data on the flight of a new plane were gathered by Navy air engineers at the Marine Corps Air Station, Cherry Point, N. C., as radio controls sent the planes through maneuvers while television or radio-telemetering instruments gave ground observers complete information on the engineering and structural performance of the craft.

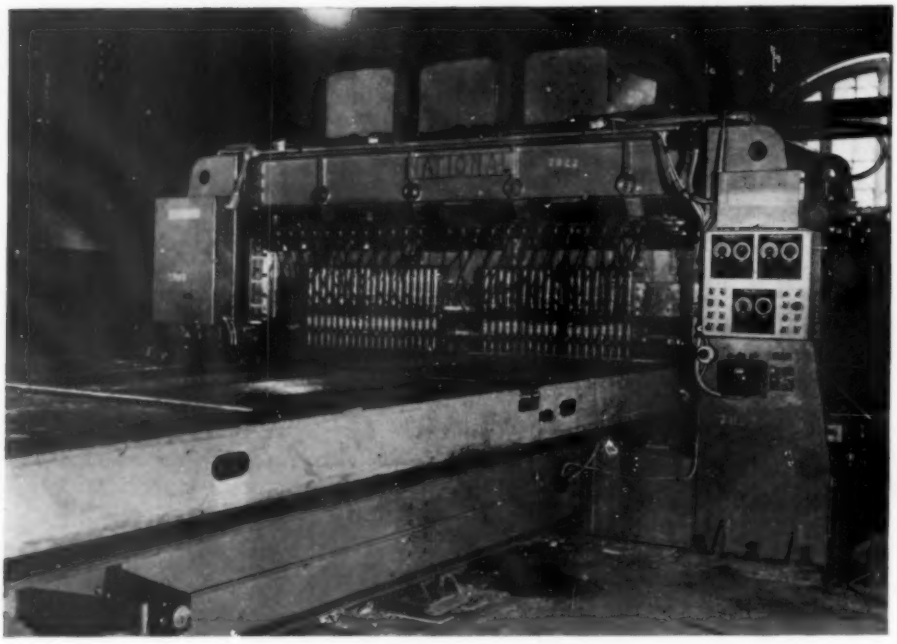
The equipment developed by the Naval Air Experiment Station, Philadelphia, Bell Aircraft Corp., and Cornell Laboratories, Inc., is an advanced form of experimental "drone" flights first made more than five years ago.

The test pilot, with a notebook to record his plane's achievements in flight, couldn't compete with the automatically recorded data sent by instruments in the systems demonstrated.

Navy equipment demonstrated radio control maneuvers at high angles of dive and dangerous speeds. Telemetering and television kept the records of the flight. Cornell Aeronautical Laboratory demonstrated a telemetering system installed in an SB2C-5, while the Bell Aircraft Corp. showed a radio control system for flying a Grumman F7F.

Science News Letter, August 24, 1946

LIFE SAVER—U. S. Navy's structural flight test station, which controls by television and radio equipment take-offs, landings and other maneuvers during test flights. The truck is completely mobile, carrying its own power supply and all electronics gear used during operations. Note chair on top from which operations are controlled.



LARGEST SPOT WELDER—Battery of welding electrodes on this new multiple electric spot welder can make up to 48 welds at a single stroke. It is used in making streamlined railway passenger cars in the Chicago plant of the Pullman-Standard Car Manufacturing Co. Table under the electrodes moves forward carrying the metal sheets to the correct position for the electric strokes that "sew" bracers or stiffeners to them. A unique electric eye arrangement makes the operation automatic.

AGRICULTURE

Research in Agriculture

Scientific research by Federal agencies and in cooperation with states on a greatly expanded scale is aim of Agricultural Research Act.

➤ SCIENTIFIC research in agriculture will undergo an enormous expansion under the provisions of the new Agricultural Research Act recently signed by President Truman. The $9,000,000 authorized in the bill is for beginnings only; expenditures are to be increased until at the end of five years they will total $61,000,000 annually.

Of this sum, $20,000,000 will be turned over annually to the state experiment stations, to be added to the present yearly grants under the Bankhead act of approximately $7,000,000. Another $15,000,000 a year is to be expended by the Department of Agriculture itself on research looking toward wider and more efficient uses of agricultural products. At present the four Regional Research Laboratories get $1,000,000 each, and additional sums are spent on utilization research in other places such as the Forest Products Laboratory at Madison, Wis.

Something new has been added to the type of research to be supported by the Department of Agriculture in a third category, in which an eventual annual outlay up to $6,000,000 is authorized by the new bill. The Secretary of Agriculture, cooperating with the states, may contract with outside institutions or individuals for special research projects, following the pattern set during the war by the Office of Scientific Research and Development. Similar peacetime research programs involving the cooperation of non-governmental laboratories and scientists have already been undertaken by the Army and Navy.

Finally, $20,000,000 a year is authorized for research in the broad field of marketing. Investigations may range all the way from a study of fungi that spoil fruits and vegetables in transit or storage to compilation of statistics to aid economists in cutting down the price spread between producer and consumer.

The initial $9,000,000 contemplated in the bill is only authorized, not appropriated. Before the work can ever begin, the next Congress will have to make some money actually available. In the meantime, however, research heads in the Department are making surveys and preparing preliminary budgetary estimates.

One of the biggest headaches for the planners is the question of finding the trained personnel to carry on the research. Even for the relatively modest program which the initial overall total of $9,000,000 will support, it will be difficult to find researchers. The young men who should have been in college and graduate-school work during the past five years have been in the armed forces and have not received the training they should have for the efficient use of the money.

The corps of research workers who will be needed to make the full $61,000,000 really useful to the country when it becomes available five years hence are now seniors in high school. They can hardly be ready for the money when it is ready for them if in the meantime they are compelled to lose time as draftees sweeping barracks or digging foxholes on summer maneuvers.

Science News Letter, August 24, 1946

ELECTRONICS

Phosphor in Lead Makes Infra-Red Rays Visible

➤ A TINY bit of lead added to zinc sulfide, a phosphor material that glows after exposure to light, makes invisible infra-red rays visible, a scientist of the General Electric laboratory has found. The discovery may eliminate electronic methods now used.

This easy way to change invisible rays into visible ones may be used to simplify the famous Army sniperscope and snooperscope used by soldiers during the war to see in the dark, themselves unseen. It may also simplify the receivers used on Navy vessels to read infra-red signals from other ships.

Dr. Gorton R. Fonda, responsible for the discovery, explained that waves of infra-red radiation are too long to affect the eye, while those of ultraviolet are too short. However, the ultraviolet is easily made visible by the phenomenon of

fluorescence used in the fluorescent lamp. In the lamp tube in which they are generated they fall upon the phosphor with which the tube is lined, their wave lengths are increased and they emerge as visible light.

Fluorescence by itself cannot make infra-red radiation waves shorter; it can only make them longer. However, there is an indirect way in which they can make visible light come from a phosphor.

Some phosphors, he explained, show phosphorescence; they continue to glow for a time after the original radiation has been removed. If, while this glow remains, the phosphor is exposed to infra-red, the brightness may be slightly increased. After that it quickly fades out. Dr. Fonda found that the effect, previously known to other scientists, occurs with zinc sulfide, a common phosphor, provided it contains a fraction of a per cent of lead.

Science News Letter, August 24, 1946

ZOOLOGY

Japan's Whaling Industry

The war with its sinking of Japan's whaling vessels wiped out whaling as an industry, and created a serious food shortage.

➤ JAPAN'S whaling industry, a highly important contributor to the island empire's food and commercial economies, was practically wiped out by the war. Figures from official Japanese sources show that the annual catch by Japanese whalers collapsed from a prewar figure of nearly 13,000 whales to only 531 in 1945.

Before the war, Japan had a fleet of six so-called factory ships, each capable of hauling a whole dead whale onto its deck and processing it for oil. Each of these factory ships was attended by a flotilla of small tug-like killer boats that did the actual hunting and harpooning. With this fleet, Japan stood about even with Germany but was considerably outclassed by the whaling fleets of Norway and Britain.

In addition to the factory ships, which sought whales mainly in Antarctic waters, Japan had on the home mainland several shore stations for rendering whale oil and processing whale meat, and one such station in the Bonin islands, in the Kuriles, and on the coast of Korea. Whale meat is unappetizing to Europeans and Americans, but the Japs seem to like it.

Japanese whalers in distant waters seldom brought their whale oil home. They sold it on the homeward voyage, used the proceeds to buy petroleum, loaded that into their tanks to take back and add to the war-lords' stockpile of military essentials.

After Pearl Harbor the factory ships of course could not visit the far southern whaling grounds any longer. This was a break for the whales, because Japan was the one power that refused to ratify or abide by the international agreement of prewar days for whale conservation, which even the Nazis observed—at least when people were looking. The ships, apparently converted for use as tankers, were found and sunk by Allied submarines and airplanes. It is believed that none of the six is left afloat today. The same fate overtook many of the killer boats, which were used as patrol craft and for other auxiliary purposes. Japan's whaling fleet is as thoroughly gone as her naval fleet.

Results show up strikingly in recent whale-catch figures. During the five-year period 1936-41, the number of whales of all species killed in Antarctic waters by Japanese whalers was 32,017. Japanese ships also sought whales in the Arctic during the two years just before the war; total catch for 1940 and 1941 was 1,252. For the five prewar years, the catch in home waters totaled 11,052 whales; the number had climbed from 1,217 in 1936 to 2,349 in 1941.

Then came the war, and with it the end of all factory-ship operations. Only the shore-based whaling in home waters continued. Before Pearl Harbor this apparently began to dwindle, for the 1942 catch was 1,148. In 1943 it had risen again to 1,491, and in 1944 the figure had been boosted to 2,169 dead whales.

Then came 1945, bringing total defeat and ruin: the count of whales taken for what had been the Japanese Empire was a mere 531, all in home waters.

It may prove desirable to let the Japanese catch whales again in their home waters, if only to replenish their bare national cupboard. If that is done, however, it is to be presumed that Gen. MacArthur will see to it that this time they observe international rules for whale conservation.

Science News Letter, August 24, 1946

TEXTILES

Jute Made into Wool Substitute in India

➤ SCIENTISTS in India, who have been searching for chemical processes of producing rayon, paper, and cheap woolen fabrics from jute, have developed a new material from jute fiber similar to coarse wool.

Prof. S. C. Sirkar and N. N. Saha, of the University of Calcutta, announce in the British scientific journal *Nature*, (June 22), that the new material, a hydrated cellulose, is superior to any previously developed.

During the war India's outlets for marketing its annual five-billion-pound jute crop, 98% of the world's supply, were so reduced that the India Central Jute Committee financed research to give jute new jobs to do at home.

Science News Letter, August 24, 1946

AERONAUTICS

New Regulations Mean Fewer Fires in Flight

➤ FIRES IN flight will be few indeed under new government regulations promised by the Civil Aeronautics Board. The orders, intended to eliminate practically all fire hazards in airplanes, will include requirements for additional fire-prevention apparatus, the use of non-combustible materials, and safeguards in electrical installations.

Easy access from the cabin to baggage and other compartments in the plane is regarded as essential by the CAB, so that a fire can be easily reached with fire extinguishers. Fire-detecting equipment in cargo and other compartments is another essential together with automatic extinguishers. Better extinguishers are desirable, particularly those using methyl bromide and carbon tetrachloride. These are better than carbon dioxide extinguishers, the CAB says.

The use of paper lunch and lavatory accessories constitutes a fire hazard, according to the Board. Aircraft designers will be required to place greater emphasis on the use of non-combustible materials in cabin lining, sound-proofing and waste containers.

Science News Letter, August 24, 1946

PETROLEUM

Oil Hunters Will Wear Bullet-Proof Jackets

➤ U. S. OIL prospectors in the jungles of Colombia will wear Army bullet-proof jackets for protection from native arrows, the Quartermaster Corps has disclosed.

Doron-armored jackets, that can repel missiles up to and including a .45 calibre revolver bullet, will protect the oil hunters from the primitive arrows that have killed or wounded many employees of an American oil company in the past few months. The armored panels in the coats are made of glass-filament laminated plastic, and they are fitted with a special tail piece containing six plates of armor and suspended from the rear of the jacket.

The scene of the new search will be unexplored country, but similar prospecting in the region has resulted in casualties when parties were ambushed by natives, reported to be accurate marksmen.

Science News Letter, August 24, 1946

PHYSIOLOGY

"Gazelle Boy" Story Believed Only Myth

➤ JESSE OWENS, Gunder Haegg and the other great track stars that own world's running records need not fear for their marks because of a "gazelle boy" reported from Africa, in the opinion of scientists.

The story told in a London newspaper reported a "human gazelle," raised by the animals, eating grass and bounding around with the speed of his foster-parents, something like 50 miles per hour. Hunters have allegedly captured the boy and put him in an African asylum.

But Dr. Dale Stewart, anthropologist at the National Museum, Washington, D. C., warns that these stories of human-animals or animal-humans have "always been on hearsay evidence."

Man, for thousands of years, has been telling stories of humans raised by animals, and they are still being told in today's comic strips. One of the earliest and most famous was of Romulus and Remus, mythical first settlers of Rome, who were said to have been raised by a wolf.

Only five years ago, Kamala, "the wolf girl," was reported from India by a missionary who rescued her from the wolves with whom she had allegedly lived for her first eight years. She died in an Indian orphanage after nine years with humans.

Russia has reported "human bears," and modern literature includes Kipling's Mowgli, but scientists are still skeptical.

"No one has ever brought in proof," declares Dr. Stewart.

Incidentally, if the "gazelle boy" does turn up in a track meet and actually can run at a speed of 50 miles per hour, he'll do the 100-yard dash in about four seconds and the mile run in one minute and twelve seconds!

Science News Letter, August 24, 1946

RADAR

Radar Stations Locate Bad Weather Over Ocean

➤ BAD WEATHER over the oceans, so high that it may never disturb surface conditions, will be located and tagged by radar when a series of storm-detecting stations are completely established by the Army. These disturbances are important in high-flying transoceanic flights.

The application of radar to storm detection is a war development, an unexpected discovery. Pilots of radar-equipped planes in the Pacific area noted effects on their scopes that were at first unexplainable. Later it was determined that they were due to reflections of radar pulses from storm formations ahead, The discovery was valuable. It gave the Army a means of dodging storms in the paths of planes en route to Japan with a cargo of bombs.

Six storm detection radar stations have already been established in the United States by the Army Air Transport Command's air weather service. A total of 35 are planned. These stations can detect thunderstorms within a 200-mile radius. They can follow the storm and observe its rate and direction of movement on the radar scope. This makes it possible to forecast with great accuracy when the storm will arrive at any given point. The program of the Army air service calls also for special investigation of stratosphere weather and for special weather studies in electronics.

Planes equipped for radar observations are now taking off daily from Florida, Newfoundland, the Azores and California to locate bad weather over the ocean. Weather information obtained is reported by radio, and used both by the Army and the U. S. Weather Bureau.

Science News Letter, August 24, 1946

IN SCIEN

ASTRONOMY

Comet du Toit-Neujmin Expected to Return

➤ ASTRONOMERS are resuming their search for comet du Toit-Neujmin, discovered in July, 1941, and due to return to the vicinity of the earth this summer. The comet was believed to have been rediscovered the end of July, but a study of the path taken by the bright object spotted moving across the sky indicates it is probably a minor planet.

Some weeks ago Director Virginio Manganiello of Argentina's National University Observatory at La Plata reported that on July 31 Senor Cecilio spotted a faint object moving across the constellation of Virgo, the virgin. But Dr. Enrique Gaviola, director of Mexico's Cordoba Observatory, has reported to Harvard Observatory that further observations suggest the tiny object is not the comet as first suspected.

Calculations of the path followed by the moving object show it will come within about 279,000,000 miles of the sun on Oct. 13. This brings it between the orbits of Mars and Jupiter. In this region revolve the asteroids, minor planets so tiny they can be distinguished from faint stars by their motion only.

Science News Letter, August 24, 1946

INVENTION

Higher Vacuums Made Possible for Research

➤ WHAT LOOKS like an important new aid to both physical research and industrial technology is offered by three English inventors, J. W. Tills, J. B. Lovatt and F. C. Potts for patent 2,404,997. It is an invention for getting nearer to nothing at all than has hitherto been possible.

With even the most efficient air-pumps it is extremely difficult to obtain a really high vacuum, and the less air there is left in a given space the harder it is to get any more out. The English trio propose to impress electric charges on these last few elusive molecules by means of a beam of X-rays, and then whisk them out of the way by means of an electrostatic field.

Science News Letter, August 10, 1946

NE FIELDS

TEXTILES

Ultraviolet Rays Detect Streaks in Textiles

➤ INVISIBLE ultraviolet radiation, which already has many applications in medicine, chemistry and the industries, now helps in a new field, detecting streaks and smears in printed textiles.

Use of ultraviolet for this purpose is among important findings made in the German textile industry by American postwar investigators. A special lamp is used which is called "Flu-Tex." It is an eight-inch quartz light tube, attached to the upper part of a reflector, and can be used in full daylight or in strong artificial light to examine materials. Fluorescent substances are added to the print paste to increase luminescence of certain print colors.

Other German processes in the textile industry were found by the scientists and textile technicians which may have value in the American industry. The Office of Technical Services of the U. S. Department of Commerce has issued a report for those interested.

Science News Letter, August 24, 1946

MEDICINE

Antibiotic, Litmocidin, Reported to Medicine

➤ DISCOVERY of a new antibiotic, or penicillin-like chemical, is announced to American scientists in a report by Dr. C. F. Gause of the Institute of Tropical Medicine, Moscow, in the *Journal of Bacteriology* (June).

The new substance has been named litmocidin because it is a pigment, and like the litmus paper familiar to every chemistry student, turns red in acid and blue in alkaline solutions.

It is produced by an organism found in the soil of southern Russia. The organism, an actinomycete, belongs to the same general group as those that produce streptomycin.

What future the new antibiotic will have is not clear from Dr. Gause's report. It is strongly active against staphylococci, streptococci, tuberculosis germs and cholera germs in the test tube, but has only moderate effect on dysentery germs and practically none on the germs of typhoid fever.

Tried on mice, litmocidin seemed pretty safe but did not work well as a remedy for blood poisoning caused by a strain of staphylococci which were checked by the antibiotic chemical in the test tube.

Details of the purification and chemical properties of litmocidin are given by Dr. M. G. Brazhnikova, also of the Institute of Tropical Medicine, Moscow. It has much in common, he reports, with the anthocyanin pigments of higher plants which are responsible for the colors of such vegetables as red beets and purple cabbage.

Science News Letter, August 24, 1946

AGRICULTURE

Tobacco Curing Is Being Streamlined

➤ SCIENCE IS about to streamline a traditional industry of the old South by introducing pushbutton methods for tobacco curing.

Until recently, bright leaf tobacco, the kind used in cigarettes, was cured just about as it was when great-granddad was in knee pants. Now growers are replacing wood-fire furnaces with automatic equipment which not only promises to improve the product, but will relieve farmers of back-breaking drudgery.

About 30,000 of the approximately 290,000 curing barns in Florida, Georgia, North and South Carolina and Virginia will be converted from wood furnaces to coal stokers and oil burners this season, according to engineers of Minneapolis-Honeywell Regulator Co., who are working with state agricultural experiment stations in introducing the new methods.

Since 1869, when the flue-curing process was originated, farmers have depended upon unreliable wood fires to heat their barns. It requires five days to cure a barn of tobacco and, since proper temperatures must be maintained 24 hours a day, growers were able to snatch only a few winks of sleep during the six weeks' harvest period.

Now, with automatically controlled stokers, it is possible for a grower to set his thermostat at a certain level and not have to check it again until time to change the temperature for another stage of curing. A thermometer installed so readings can be made outside relieves his having to enter the barn except to check moisture content and color of the leaf.

Science News Letter, August 24, 1946

METALLURGY

Boron Used Successfully In Hardening Steels

➤ VALUABLE new information on the use of boron partially to replace molybdenum in hardening steels results from a wartime study now available to the public.

The testing was carried out at the Battelle Memorial Institute, Columbus, Ohio, under the sponsorship of the National Defense Research Committee by M. C. Udy and P. C. Rosenthal. A report prepared by these two scientists is available from the Office of Technical Services, U. S. Department of Commerce.

One hundred boron-treated steels were tested. Nickel-chromium-molybdenum and manganese-molybdenum base steels were used. From the standpoint of hardenability best results were obtained with additions of .0015% to .002% boron, the researchers found. The boron addition had no apparent adverse effect on notch-bar toughness at temperatures down to 80 degrees below zero Fahrenheit.

Boron can be used to replace half the molybdenum in aluminum-killed steels of certain compositions, the report states.

Science News Letter, August 24, 1946

INVENTION

Ball and Socket Joint Compensates for Own Wear

➤ BALL AND socket joints important to users of many kinds of machines, will no longer need frequent replacement if a new joint recently patented lives up to expectations. It is called an automatic wear-compensating joint, the wear being compensated for by a tapering pin that spreads the two halves of the ball.

This ball of the joint is in two semi-spherical parts with curved inner surfaces that form a tapering bore to hold the tapering pin. The smaller end of the pin, projecting through the socket, holds a nut behind which is a spring. The spring tends to draw the pin tighter into the bore, and does so if there is any wear on the outside of the ball or the inside of the socket. This expands the sections of the ball, causing them to fit closely into the socket. A special system of lubrication helps reduce wear.

The patent number for this joint is 2,401,814 and it was awarded to Paul B. Burhans of Fort Myers, Florida.

Science News Letter, August 24, 1946

CHEMISTRY

Insecticide Repels and Kills

NMRI 448, most effective insect repellent and killer, developed by Navy research for jungle fighting, is being manufactured for civilian use.

A TWO-EDGED weapon against "bugs" that does more than even DDT has emerged from scientific research.

It repels insects and it kills insects.

Like DDT, the new chemical, called 448, goes on killing any insects that come in contact with it for a long time. It is effective up to 30 hours, after it has been sprayed on walls, clothing and skin.

Going farther than DDT, this new anti-bug weapon also repels insects, keeping them at bay for 10 to 14 days.

If you spray your house or barn, you not only kill all the flies, mosquitoes and other bugs in it, but you can be sure no more will come in for 10 days to two weeks. It is non-poisonous, so it can be sprayed on cattle before they go out to pasture, and on people going to picnics or sitting on the lawn.

Official U. S. Navy photograph

11-HOUR REPELLENT — Lieut. (jg) Jachowski (left) watches Lieut. Comdr. Michael Pijoan (MC), USNR, as he completes the synthesis of the new insecticide which repels disease-bearing insects for as long as 11 hours as well as kills them. Two years of laboratory experiments with some 2,000 trial preparations were made at the Naval Medical Research Institute, Bethesda, Md.

NMRI 448 was developed by Lt. Comdr. Michael Pijoan and associates at the Naval Medical Research Institute, Bethesda, Md. The initials are for the name of the institute. It is made up of two long-named chemicals, 2-phenylcyclohexanol and 2-cyclohexyl cyclohexanol.

The repellent feature, of course, was the prime object of the research at the Naval Medical Institute. Even before the first Marine landed on Guadalcanal, the Navy knew it had to fight bugs, especially malaria mosquitoes, as well as Japs. And fighting bugs in the tropics, as many a returned veteran will tell you, is something different from swatting the flies or mosquitoes that occasionally get into your screened house or lifting a few ants out of the sugar at a picnic.

A repellent for use in jungles has to be powerful, safe and easy to use. Something a man can quickly douse himself with which won't hurt him if he should swallow a little of it and something that won't irritate his skin. It also has to be something that will not dissolve in water, so that it will not be washed off by sweat and tropic rains.

To make sure of this point, 448 and other repellents were tested under tropical conditions in the laboratory. A temperature of 90 degrees Fahrenheit dry bulb, 80 degrees wet bulb, was maintained in a cage full of mosquitoes.

Scientists and their assistants smeared a repellent on one of their arms and then sat with it inside the cage, holding a clock on the mosquitoes to time the first bite. To make sure the repellent would work under conditions of dripping sweat as well as "pool sweat," the kind that stays on the skin instead of dripping off, the scientists engaged in vigorous exercise for some of the tests.

Dimethyl phthallate, most commonly used insect repellent during the war, had a repelling time of only 80 to 90 minutes. NMRI 448 averaged 289 minutes in early laboratory trials. Follow-up trials in the jungle showed it had an even longer repelling time.

Mosquitoes that spread malaria were the chief target at which 448 was aimed. But it has turned out to be effective against disease-bearing mosquitoes as well as such other bugs as chiggers, fleas, flies and cockroaches.

Insect repellents have been known and used for many years. Some of you may remember burning Chinese punk sticks at evening garden parties. Oil of citronella, which some people found as repellent as the mosquitoes did, is another old-timer.

The two most effective repellents today are the Navy's 448 and Rutgers 612, which chemically is 2,ethylhexanediol 1,3. Indalone, introduced within the past few years, is highly effective against flies.

The insect-killing power of 448 has only recently been discovered, since it was made in the search for a better repellent. It is this unique double feature, killing and repelling, of 448 that promises to raise it above DDT and other newer insect killers.

The list of new insect killers is long and confusing. They include the highly toxic benzene hexachloride, also known as 666; sabadillo, azobenzene, a highly effective unidentified compound with the empirical formula $C_{10}H_6Cl_8$; DFDT which is a chemical cousin of DDT, TDE which is another relative of DDT, and hexaethyl tetraphosphate.

The war stimulated the search for new chemical weapons against bugs for a number of reasons. Troops had to be protected against malaria, typhus fever and other diseases spread by insects. More food was needed, so crops, poultry and cattle had to be protected as never before. Finally, some of the older anti-bug chemicals, such as rotenone, were in short supply.

Peace finds the world still desperately needing food, and people in many regions living under such overcrowded, unsanitary conditions that disease is an ever-present specter. Many public health officials believe that one-half the infectious, or germ-caused, disease problems occurring in the world are directly attributable to insect vectors. The financial cost of insect destruction is staggering. The poultry industry alone loses $85,000,000 in a year to insects.

PHYSICS

New High for Protons

Frequency modulation principle applied to atom-smashing is expected to accelerate protons to 350 million electron volts. Fifteen million volts have been attained.

➤ PROTONS, the nuclear particles which scientists are grooming as the most powerful puncher in atom-smashing, have been accelerated to a new high energy of 15,000,000 electron volts at the University of California.

Significantly, this top power was achieved in a pilot experiment in Prof. Ernest O. Lawrence's 85-ton cyclotron, which a little more than 10 years ago was the world's only big-league atom-smasher but has now been dwarfed by a succession of giant machines.

Fifteen million electron volt protons were achieved using the new frequency modulation principle, which will be applied to the 4,000-ton cyclotron now nearing completion. Eventually this machine is expected to be able to accelerate protons to 350 million electron volts.

Technical difficulties have always made it more difficult to speed up protons to the high energies of less temperamental nuclear particles such as deuterons (heavy hydrogen nuclei) and alpha particles (helium nuclei). For this and other reasons, deuterons and alpha particles have been most widely used.

Frequency modulation, suggested by Prof. Edwin M. McMillan, makes it possible to adjust the timing of accelerating electrical impulses to fit the characteristic revolutions of protons as they are pushed around the circular orbit in the cyclotron chamber. This was proved in the pilot experiments with the 85-ton cyclotron.

One of the reasons the proton is considered to be the most promising atomic bullet for learning about the nucleus of the atom is that the proton itself is a basic particle of the nucleus. Deuterons and alpha particles are made up of neutrons as well as protons.

The experiments in which the new proton energies were achieved were conducted by Drs. J. Reginald Richardson, Kenneth R. MacKenzie, E. J. Lofgren, Fred Schmidt, and Byron T. Wright, of the Berkeley Radiation Laboratory.

Science News Letter, August 24, 1946

INDUSTRY

Third of Women to Work

➤ BY 1950 one in every three women over 14 years of age, or more than 16,000,000 women, will be employed in nearly every type of industry in the United States.

This mass invasion of the man's world will bring to industry problems concerning the health and efficiency of working women that were not solved during the employment peak of the war years when 18,000,000 women were in industry.

"Women appear to be more critical of the working conditions than men," says Dr. Anna M. Baetjer, of Johns Hopkins University, in her new book, "Women in Industry." Adequate lunch periods, rest pauses, and sanitary facilities reduce fatigue and add to the happiness and efficiency of women at work as do proper working hours and accident prevention rules.

Since women are on the average only 85% as heavy as men and have only about 60% as much physical strength, they have often been excluded from jobs that proper training would have enabled them to perform. The War Manpower Commission and the American Medical Association committee on the health of women in industry aided employers to plan normal training periods for jobs for women during the war.

Women have been found to be more satisfactory than men in work that requires accuracy and speed with the hands. One automobile manufacturer reports that women are especially suited for bench work, assembly, inspection, conveyor loading, packing, paint spray, spot welding, light punch press, and riveting.

Women are ill more frequently and lose more time from work because of sickness than do men, but their absences are shorter. The average number of days lost per year due to sickness alone has been reported to be from 7 to 11 days per woman in comparison with 2 to 7 days per man.

Studies of illnesses lasting one day and longer made by the U. S. Public Health Service show that the excess sickness in women is not due to the so-called "female diseases" but is true of almost all the diseases common to men and women. The chief causes of sick-absenteeism were: 1. Respiratory diseases, such as colds and 'flu, which accounted for about 50% of both the number of cases and the annual number of days lost. 2. Digestive diseases, which were responsible for almost 20% of the cases.

Married women in industry, burdened with household and family worries, present plant physicians with somewhat higher sickness rates than single women. Industries that aid their workers in finding transportation, recreation, nursery schools, and housing will probably reduce the sick-absenteeism of women.

Pregnant women who work because of economic needs have brought to industry many new health, production, and social problems. Federal and health agencies suggest that women be allowed a minimum leave of six weeks at the end of pregnancy, and from six to eight weeks after delivery.

The new book is issued under the auspices of the National Research Council by W. B. Saunders Co.

Science News Letter, August 24, 1946

MEDICINE

Tobacco Not Believed To Cause Cancer

➤ IF YOU have been scared by a recent popular magazine article suggesting that "tobacco may be the cause of widespread, terrible forms of cancer," you can relax with your pipe or favorite brand of cigarette if you wish.

That is what one scientist consulted did. When asked the question: does smoking cause cancer? He pulled out his pack of cigarettes. Then he settled down to tell what was obvious, that in his opinion there was no danger.

Pursuing the matter further, authorities at the National Cancer Institute were consulted. They advised that there is no experimental or clinical evidence which would indicate that tobacco smoke is a factor in the cause of cancer. There is some clinical evidence, meaning from studies of men, not mice, that tobacco tar may be a cause of cancer, but it is not very conclusive.

Science News Letter, August 24, 1946

Do You Know?

Ice cream was first made and marketed in Baltimore, Md., in 1851.

Over half of all the *children* in the United States today were born in rural communities.

Weed-killer 2,4-D is the same substance which is used in weak solution to produce seedless tomatoes.

For *canning*, year-old hens and older stewing birds are better than very young chickens; they have more meatiness and flavor.

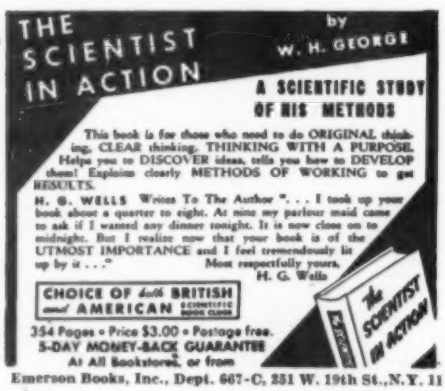
Though the rapidity of *wound healing* is apparently not affected by vitamin C, a moderate deficiency of this vitamin interferes with bone repair.

Viscose *rayon fibers* become warmer and more wear-resistant when fish protein is added to the cellulose compound, German scientists claim.

A new topographic *surveying* device called the "step-writer" which measures distances directly by the leg-motion of the pedestrian, has been developed for U. S. Army Engineers.

Radio communication between New York and Moscow can now go by way of an automatic relay station at Tangier, North Africa, when magnetic storms interfere with the direct air route about over Iceland.

A method has been developed to determine the amount of *carbon monoxide* in the air by the reaction of red mercuric oxide with this poisonous gas; the reaction forms carbon dioxide gas and mercury vapor.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GENERAL SCIENCE

Science Failed Hitler

➤ GERMAN scientists were Hitler's hope. They were to produce the miracle weapons that would give the German forces superiority over the Allies in spite of their wealth, resources, ingenuity and ability to produce. Near-miracle weapons nearly came, but the coming was too long delayed.

Some of the reasons for the delay are given in a report just issued by the Office of Technical Services, U. S. Department of Commerce, as a result of postwar studies made in Germany by American civilian and military scientists and technical men. It was prepared by Col. Leslie E. Simon of the Army Ordnance Department.

Lack of contact and coordination between scientific groups working for the Army, Navy, Air Force and the industries, all with separate establishments, was an important reason. Jealousy between scientists and engineers was another, according to the report.

While one part of the report gives a comprehensive picture of the organization of German scientific establishments, considerable space is given to outstanding scientific accomplishments. Some of the unique contributions of German scientists are also included.

The report gives descriptions of major developments in aerodynamics, rockets, fuzes, armor penetration, infra-red, computing machines, parachutes for bomb stabilization, and the use of sound as a weapon.

Among the unique developments is included a long-range combination instrument, called a phototheodolite, that could take pictures giving details 15 miles away, and a relatively small tube filled with phosphorescent chemicals which could be used to detect enemy infra-red waves.

Of particular interest, however, is a nearly perfected glide bomb which could be viewed on a television screen as it was guided by radio to its target, and a nearly completed beam-climbing missile capable of following a radar beam focussed on an enemy plane or ship.

These two, together with long-range rockets and jet-propelled implements of war, were probably the principal miracle weapons that Hitler expected his scientists to produce to save him when his Army and air force failed. They nearly did so, but their achievements came too late.

Science News Letter, August 24, 1946

ENGINEERING

Plastic Bearing Models Aid Study of Lubrication

➤ MODELS OF machine bearings made of transparent plastic are taking much of the guesswork out of lubrication problems. With these models scientists can watch the distribution of the oil or grease, and see how they perform.

The use of these plastic models was revealed by John Boyd, Westinghouse research engineer who developed the novel technic. One peek at them, he said, is better than weeks of mathematical calculations.

"Now we can see what is happening," he continued, "and can design bearings which will handle a heavier load and help make possible more powerful motors without any increase in size or weight."

How well the flow of the lubricants in bearings approximated ideal conditions was a mystery until this test method was developed.

INSIDE LOOK—Transparent plastic model of an actual machine bearing shows the technic developed by a Westinghouse research engineer who needed to know what happened to lubricating oil inside a moving bearing. Oil, colored red, is fed into the plastic bearing and the lubrication effectiveness immediately is apparent.

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523-Q	Six Threaded Metal Reticle Cells	.25
624-Q	Neutral Ray Filter size 4¾" x 2½"	.25
3022-Q	Round Wedge 65 mm. dia.	5.00 each
16-Q	Level Vial, 48 mm. long	.20 each
1040-Q	6 Power Magnifier—diam. 25 mm.	.25 each
2043-Q	Standard Crossline Reticle —dia. 29 mm.	.50 each
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535-Q	Small First Surface Mirror	.30
3003-Q	Amici Roof Prism with Corrected Roof	2.50
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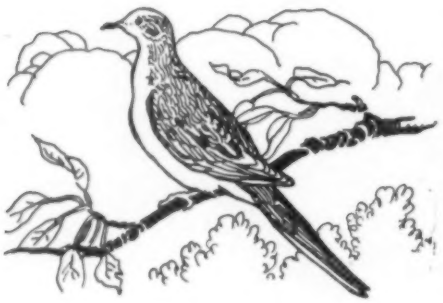
ORNITHOLOGY

NATURE RAMBLINGS

by Frank Thone



Lethal Weapon

➤ IF YOU WERE to ask almost anyone who is acquainted with the tragedy of the passenger pigeon why that beautiful bird has been reduced from a primeval population of unknown millions to nothing at all, he would be very likely to answer at once, "Why, hunters' guns, of course!"

That would not be the correct answer at all. Unlimited massacres that went under the name of hunts did account for a great deal of the havoc, but they were not the only factor, not even the principal one. The pioneer's ax, not the hunter's gun, must bear the main responsibility.

The passenger pigeon was a woodland bird. It needed trees for nesting and for the gregarious roosting of its huge flocks. Even more it needed acorns and beechnuts for food. Longfellow takes note of this peculiar food habit in "Evangeline," where he speaks of the portentous flocks of pigeons "Darkening the sky in their flight, with naught in their craws but an acorn."

The pioneer was an enemy of the forest; or rather, he considered the forest an enemy of himself. It held land that he wanted to plow; it sheltered redskinned enemies who wanted to scalp him. So he swung his ax at the trunks of trees as he might have at the necks of stubborn foemen.

And when the pioneer stage gave way to the developmental (which often meant merely the exploitative), the early lumberman finished the job of sweeping the Eastern forests clean.

All of which meant death for the passenger pigeon. The felling of the trees robbed him of both home and food, and the multiplication of the human population at the same time increased the number of hunters who had never heard of bag limits. There may have been other factors at work, too, that we do not know about now, like epidemic diseases. At any rate, the passenger pigeon went, and went fast.

Science News Letter, August 24, 1946

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AERONAUTICS

First Flight of XB-36 Judged Excellent

➤ THE "X" now in the XB-36 designation of the Army's new giant bomber can be dropped soon, judging from the excellent performance in its first flight recently made. The "X" stands for "experimental."

It will stay until enough flights have been made so that all "bugs," if any, are located and corrected, and the plane is ready for production-line construction. The XP-84 Thunderbolt, the Army's newest jet-propelled fighter, has been in the air since early summer. The XS-1, designed for a trial to beat the speed of sound, has undergone glider and diving tests in the air and is now being fitted with its rocket engines that will enable it to reach high altitudes in an atmosphere far too rare for the operation of other engines.

The XB-36, the big brother of the famous B-29, had undergone nearly two months of ground and taxi tests before it was given its first tryout in the air. Army officials pronounce the first test satisfactory. The plane remained aloft for 38 minutes, then settled safely to the runway in a performance that exceeded expectations.

The world's largest bomber is roughly 40% larger than the B-29. It is 163 feet long, has a wing-span of 230 feet, and a rudder height of over 37 feet. It is powered by six 3,000 horsepower Pratt and Whitney engines mounted on the trailing edge of the wing, three on each side of the fuselage. Each engine drives a three-bladed pusher-type propeller.

The XB-36 was built by Consolidated-Vultee Aircraft Company at Fort Worth, Texas. Design and construction were under the supervision of the Army Air Forces Materiel Command, Wright Field, Ohio. It carries a crew of 15 men, has an estimated range of 10,000 miles, and a bomb-carrying capacity of more than 30 tons.

Science News Letter, August 24, 1946

MEDICINE

Paderewski Hospital Moves Back to Poland

➤ A GREAT Polish medical center, the Paderewski Hospital, which has been an institutional guest in the city of Edinburgh, Scotland, during the past five years, is now preparing to go home and do its share in the reconstruction of Poland. Its director, Dr. Antoni Jurasz, is in Washington, D. C., with a colleague, Dr. W. Koskowski, to report on a survey of the medical situation in their home country which they have just completed, and to discuss plans for the transfer of the hospital.

The Paderewski Hospital, which comprises a medical school and a research institution as well as a hospital and outclinics, was established by the Paderewski Testimonial Fund, an agency of American Relief for Poland.

The hospital, during the war, provided medical care for thousands of Polish citizens in exile, including some overflow patients from Polish military establishments in Britain.

It is expected that (*See next page*)

Books of the Week

THE CHALLENGE OF POLIO: The Crusade Against Infantile Paralysis—Roland Berg—*Dial Press,* 208 p., $2.50. An account of the tireless search for a magic drug to halt infantile paralysis.

DAWN OVER ZERO: The Story of the Atomic Bomb—William L. Laurence—*Alfred A. Knopf,* 274 p., illus. $3. An eye-witness account of the first test of the bomb in New Mexico with an analysis of the potentialities and limitations of the use of atomic energy in civilian life.

A DESCRIPTIVE AND ILLUSTRATIVE CATALOGUE OF CHINESE BRONZES—*Freer Gallery of Art,* 108 p., plates, $5. An analysis of the Chinese figures used in ceremonial vessels, blades, and mirrors with their historical data accompanied with illustrations.

DIAGNOSTIC EXAMINATION OF THE EYE—Conrad Berens, M.D., and Joshua Zuckerman, M.D.—*Lippincott,* 711 p., $15. A step-by-step procedure for a complete examination of the eye, written for the practitioner, the ophthalmologist, and the medical student.

EDUCATION IN PERU—Cameron D. Ebaugh—*U. S. Printing Office,* 91 p., tables, paper, 20 cents. A survey of the educational progress in Peru giving a description of the elementary, vocational and professional training offered in the schools. Federal Security Agency, Bull. 1946 No. 3.

ETHNOGRAPHY AND ACCULTURATION OF THE FORT NELSON SLAVE—John J. Honigmann; and NOTES ON THE INDIANS OF THE GREAT SLAVE LAKE AREA—J. Alden Mason—*Yale Univ. Press,* 212 p., tables, paper, $2.50. Yale Publications in Anthropology, No. 33 and 34.

GREEN FIELDS ARE GOLD—*DuBois Press,* 42 p., paper, 11 cents. A book presenting facts on how to increase farm profits through a Grassland Program: the production, preservation, utilization of grass for pasture, hay, silage, all fodder, forage and roughage crops.

HIGH-SCHOOL PERSONNEL WORK TODAY—Jane Warters—*McGraw-Hill,* 277 p., $2.50. A book for high-school administrators, teachers, and specialists who are concerned with student personnel work.

THE LIFE OF A CHEMIST: Memoirs of Vladimir N. Ipatieff—*Stanford Univ. Press,* 858 p., $6. The autobiography of a contemporary chemist, which gives the layman an understanding of the problems facing the scientist in war and in peace.

THE METALLURGY OF QUALITY STEELS—Charles M. Parker—*Reinhold,* 248 p., tables and illus., $6. An introduction to the fundamentals of the metallurgical sciences.

NEW WORLDS IN MEDICINE: An Anthology—Harold Ward, ed.,—*McBride,* 707 p., tables, $5. The story of modern medicine in peace and at war. Conspicuous in the dramatic panorama are such grim problems as cancer, old age, epidemics, and mental disease, while, like an undertone of artillery, come the stories of medicine in World War II.

NUCLEONICS: What Everybody Should Know About Physics—*Public Affairs Press,* 38 p., tables and illus., paper, $1. A handbook on the structure of matter and the atom, including a discussion of its peacetime applications.

A REEXAMINATION OF THE FOSSIL HUMAN SKELETAL REMAINS FROM MELBOURNE, FLORIDA: With Further Data on the Vero Skull—T. D. Stewart—*Smithsonian Institution,* 28 p., plates, paper, 30 cents. Smithsonian Miscellaneous Collections, Vol. 106, No. 10.

SUCCESSFUL TEACHING: Its Psychological Principles—James L. Mursell—*McGraw-Hill,* 338 p., $3. A comprehensive account of teaching organized about six basic psychological principles: context, focus, socialization, sequence, and evaluation.

TECHNIQUE OF PSYCHOANALYTIC THERAPY—Sandor Lorand, M.D.—*International Univ. Press,* 251 p., $3.50. The basic principles of psychoanalytic therapy as set forth by Freud and applied to the author's clinical experiences.

UNITED NATIONS WEEKLY BULLETIN—*International Documents Service*—weekly, $6 a year. Vol. 1, No. 1, of a new bulletin published by the Department of Public Information in order to provide a concise account of the activities of the United Nations and its specialized agencies.

USE OF TOOLS: Phototold in 420 Pictures—Fremont Davis and Marjorie Van de Water—*Infantry Journal Press,* 238 p., illus. and diagrs., $3.50. Illustrations with some lines of text by the photographer and a staff writer of Science Service, showing how to use tools, how to keep them in good repair, and even how to repair them.

Science News Letter, August 24, 1946

WILDLIFE

Sulfa Drug Treatment For Hatchery Disease

➤ YOUNG TROUT, salmon and related fish can be saved from the most destructive of hatchery diseases, furunculosis, by sulfa drugs, Dr. James S. Gutsell of the U. S. Fish and Wildlife station at Leetown, W. Va., reports in *Science,* (July 26).

Most successful of the sulfa drugs he used in his experiments was sulfamerazine, although sulfathiazole also produced good results.

Furunculosis is, in plain English, boils. Job had furunculosis. He didn't die of it, however, and fingerling trout do. The sulfa drug treatment is the first real sign of hope in the history of artificial fish rearing.

Science News Letter, August 24, 1946

From Page 126

the Paderewski Hospital will be set up in the Katowice industrial region in Silesia, which is to Poland what the Pittsburgh area is to the United States.

Dr. Jurasz stated that he has met with full understanding on the part of the Ministry of Health in Warsaw, and that negotiations for the homecoming of his hospital are progressing satisfactorily.

Science News Letter, August 24, 1946

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New Machines And Gadgets

❁ *AIRCRAFT radio receiver is so compact that it can be mounted in a standard three-inch instrument opening in the plane's instrument panel. Cylindrical in shape and about six inches long, it is designed for use in private aircraft. By a flip of a switch it can be changed instantly from radio range to traffic control frequencies.*

Science News Letter, August 24, 1946

❁ *CLOTHESLINE tightener consists of an S-shaped aluminum hook and a cadmium plated steel clevis, or link, that operates over the notched end of the hook. The free end of the line runs through the clevis. When the line is pulled tight, then released, the clevis grips it.*

Science News Letter, August 24, 1946

❁ *COMBINATION try square and handsaw uses the back of the saw blade for a straightedge and an attachable slotted metal piece to form the heavy leg of the square. This slotted piece straddles the saw blade close to the handle and is held in place by a set screw and an arm projecting rearward.*

Science News Letter, August 24, 1946

❁ *TANGLE-PROOF lifeline keeps Junior out of trouble, makes life easier for mother. Lightweight nylon cord is wound around an automatic take-up reel which can be anchored in the ground or attached to furniture. The strong cord can be adjusted to any desired length.*

Science News Letter, August 24, 1946

❁ *SKY CRADLE provides a seat and bed for baby airline passenger. Suspended by webbing on a tubular metal frame, the bassinet has a quilted plastic lining and wide belt fastened by a zipper across the child. Special waterproof lining for exclusive use is provided.*

Science News Letter, August 24, 1946

❁ *STAR CHART and star measuring tape enable amateur astronomers to locate the 55 navigational stars. A rotating arm on the chart gives the direction and distance of a star sought; then the tape, held at arm's length with one end fixed on the North Star, makes easy the location of the star in the heavens.*

Science News Letter, August 24, 1946

❁ *NEW-TYPE coating for concrete, masonry and metal structures can be effectively applied on damp surfaces. The black protective film is waterproof, fire-retardant, will not flow or sag at temperatures up to 600 degrees Fahrenheit, and does not wrinkle in sunlight.*

Science News Letter, August 24, 1946

❁ *HOME DUST precipitator, which removes also pollen and smoke from air, cuts cleaning costs and relieves hayfever suffering. The motor, that charges the particles of dust and collects them on negatively charged cell plates, is contained in a metal radio-size cabinet.*

Science News Letter, August 24, 1946

If you want more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, *1719 N St., N. W., Washington 6, D. C., and ask for Gadget Bulletin 325. To receive this Gadget Bulletin without special request each week, remit $1.50 for one year's subscription.*

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Question Box

AERONAUTICS
What new government regulations promise fewer fires in flight? p. 119.
Why may test pilots soon lose their jobs? p. 117.

AGRICULTURE
What are the provisions of the new Agricultural Research Act? p. 118.
What type of furnace is being installed to streamline the curing of tobacco? p. 121.

ASTRONOMY
What comet is expected to return to the vicinity of the earth sometime during this summer? p. 120.

CHEMISTRY
Who was the chief chemist who developed NMRI 448 for repelling and killing insects? p. 122.

ELECTRONICS
What metal added to zinc sulfide makes infra-red rays visible? p. 118.

NUTRITION
What are the high points in the FAO's world food plans? p. 117.

ORDNANCE
In what way are German V-2 rockets proving useful to American science? p. 115.

ORNITHOLOGY
What was the chief enemy of the passenger pigeon, causing its extinction? p. 126.

PHYSIOLOGY
Why do scientists believe the "Gazelle boy" story is only a myth? p. 120.

PHYSICS
Why is the proton the most promising atomic unit for learning about the nucleus of the atom? p. 123.

ZOOLOGY
What Japanese industry wiped out by the war has created a serious food shortage? p. 119.

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